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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/619,647	07/14/2003	Donald K. Harper JR.	003A.0092.U1(US)	1264

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HARRINGTON & SMITH, LLP
4 RESEARCH DRIVE
SHELTON, CT 06484-6212

EXAMINER
GUSHI, ROSS N

ART UNIT	PAPER NUMBER
2833	

DATE MAILED: 06/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

KS

Office Action Summary	Application No.	Applicant(s)	
	10/619,647	HARPER, DONALD K.	
	Examiner	Art Unit	
	Ross N. Gushi	2833	

-- The MAILING DATE of this communication appears on the c ver sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 June 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3, 15, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 3, 15, the meaning of "a compound curvature" is unclear and confusing in light of the specification and drawings. The term is treated as meaning that the contact area is curved.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harper, Jr. et al. ("Harper") in view of Lin et al. ("Lin").

Regarding claims 1, Harper discloses an electrical contact assembly comprising a contact terminal comprising a base 25 and cantilevered deflectable contact arms (15, 17) extending from least one lateral side the base, a first contact arms extending a downward direction and second one contact arms extending in an upward direction, wherein the contact arm comprises surface contact area for contacting a second pad on

second electronic component, and wherein first and second contact arms are adapted to deflect when the contact area of the second contact arm is contacted by the second pad of the second electronic. Harper does not discuss a fusible element. Lin discloses a fusible element 2 attached to terminal tail 52. At the time of the invention, it would have been obvious to attach a solder ball to the Harper arm as taught in Lin. The suggestion or motivation for doing so would have been to create a permanent and reliable electrical connection between the terminal and the board, as taught in Lin and as is well known in the art.

Per claim 2, the contact terminal comprises stamped sheet metal.

Per claim 3, the contact are is curved.

Per claim 4, the first and second contact arms extend from same lateral side the base.

Per claim 5, the first and second contact arms extend opposite directions generally parallel each other.

Regarding claims 6, 7, Harper does not disclose a concave bottom surface. Lin discloses a concave bottom surface 42, wherein a top surface the fusible element is attached to an end of the contact against the bottom concave surface. At the time of the invention, it would have been obvious to construct the Harper arm with a concave surface for mounting a solder ball as taught in Lin. The suggestion or motivation for doing so would have been to facilitate attachment of a solder ball as taught in Lin.

Regarding claim 8, Lin notes that it is known in the art to attach a solder ball by extending an a contact arm into the ball (see Lin figure 1). At the time of the invention, it

would have been obvious to attach a Solder ball to the Harper arm using well known methods, such as by having the arm extend into the ball as noted in Lin. The suggestion or motivation for doing so would have been to attach a solder ball to a terminal, such motivation being well known in the art.

Claims 1, 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grabbe in view of Lin et al. ("Lin").

Regarding claims 1, Grabbe discloses an electrical contact assembly comprising a contact terminal comprising a base (see figure 12) and cantilevered deflectable contact arms extending from least one lateral side the base, a first contact arms extending a downward direction and second one contact arms extending in an upward direction, wherein the contact arm comprises surface contact area for contacting a second pad on second electronic component, and wherein first and second contact arms are adapted to deflect when the contact area of the second contact arm is contacted by the second pad of the second electronic. Grabbe does not discuss a fusible element. Lin discloses a fusible element 2 attached to terminal tail 52. At the time of the invention, it would have been obvious to attach a solder ball to the Grabbe arm as taught in Lin. The suggestion or motivation for doing so would have been to create a permanent and reliable electrical connection between the terminal and the board, as taught in Lin and as is well known

Claims 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grabbe in view of Lin as in claim 1 in view of Roder et al. ("Roder").

Per claim 9, Grabbe discloses a carrier 12" with apertures and tabs 22' to form a stapled connection between terminals 20" and carrier 12". Regarding whether the tabs extend back toward the body, to the extent that it is arguably ambiguous whether the Grabbe tabs extend back toward the main body, Roder discloses tabs 30, 32, which extend back towards the body. At the time of the invention, it would have been obvious that the crimping of the Grabbe tabs 22' could naturally result in the tabs extending back toward the body, as shown in Roder. Such a structure would have been an obvious if not natural consequence of the crimping die and would have been desirable to best secure the contact to the substrate, such motivation being well known in the art.

Per claims 10, 11, 12, the Grabbe carrier comprises a flexible dielectric film sheet of insulative material and a plurality of apertures.

Claims 13, are rejected for the reasons pertaining to claims 1 and 9-12.

Per claim 14, the Grabbe terminal is made from sheet metal.

Per claim 15, the Grabbe arms extend up and down and the contact areas are curved.

Claims 9, 10, 13-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harper and Lin as in claims 1-8 in view of Grabbe and Roder as discussed regarding claim 9. Per claims 9, 13, Harper discloses a carrier 11 with apertures 19. Harper does not use tabs to form a stapled connection. Grabbe discloses using tabs 22' to form a stapled connection between terminals 20" and carrier 12". At the time of the invention, it would have been obvious to attach the Harper/Lin contact assembly to a carrier such as by using tabs in the terminal base to form a stapled connection as taught

in Grabbe and Roder as discussed regarding claim 9. The method of attachment of the terminal to the carrier, whether by using apertures and posts as in Harper or by using tabs inserted into slots and subsequently bent as taught in Grabbe would have been a matter of engineering design choice motivated by known factors such as ease of assembly, cost, etc.

Per claim 10, the Harper carrier comprises a sheet 31 of insulative material an a plurality of apertures.

Claims 14-22 are rejected for the reasons pertaining to claims 1--9.

Response to Arguments

Regarding the 35 USC 112 rejections, applicant argues that other patents use the term "compound curvature." The examiner is not objecting to how others have used the term. The examiner is rejecting applicant's use of the term, and not the use of the term in other patents. Applicant gives no description of how applicant's contact arm comprises a compound curvature and applicant's figures do not clearly show any compound curvature in the curved top surface 58. Therefore applicant's use of the term is unclear and the fact that others may have used the term clearly does not clarify applicant's claim.

Regarding Harper and Grabbe, the examiner agrees that the Harper and Grabbe contact arms allowing wiping when the contacts are not permanently attached to the underlying substrate. The wiping action is desirable when connections are repeatedly made and broken. However, it is also well known in the art that it is sometimes desirable to permanently attach a contact to a substrate and that soldering the contact

to the substrate creates a secure electrically stable attachment. Therefore the examiner maintains that it would have been obvious to permanently attach the Grabbe or Harper contacts using well known techniques such as disclosed Lin. Applicant's remaining arguments are moot in view of the new grounds of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ross Gushi whose telephone number is (571) 272-2005. If attempts to reach the examiner by phone are unsuccessful, the examiner's supervisor, Paula A. Bradley, can be reached at 571-272-2800 extension 33. The phone number for the Group's facsimile is (703) 872-9306.

ROSS GUSHI
PRIMARY EXAMINER